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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,950	01/17/2001	Manfred Fuchs	P00,1909	6971

7590 09/25/2002

SCHIFF HARDIN & WAITE  
Patent Department  
7100 Sears Tower  
233 South Wacker Drive  
Chicago, IL 60606

EXAMINER

CLEVELAND, MICHAEL B

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No. *Hb*

09/764,950

Applicant(s)

FUCHS ET AL.

Examiner

Michael Cleveland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement filed 5/14/2001 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. (The only reference not considered is the van de Waterbeemd reference because p. 380 is missing. The reference will be considered if Applicant includes a copy of p. 380 with any response.)

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1: The phrase "said fluorescent layer...with a density which is reduced in comparison to a density which said fluorescent material has as a solid" is unclear because the fluorescent material is a solid. The phrase appears to refer to the phenomenon that cracks (i.e., voids) exist between the claimed needle structures, and therefore the presence of cracks or separations between needles, columns, or pillars of phosphor layers (as is known in the art; see below) has been interpreted as meeting this claim limitation.

Claim 2: It is unclear whether the density is reduced by 5-50% or to 5-50% of the "solid density". The specification implies that it is reduced by 5 to 50% (p. 4, middle), and so the claims has been so interpreted.

Claim 5: The phrase "said inert gas" lacks proper antecedent basis because no inert gas is discussed in parent claims 1-3.

Claims 3-4 and 6-15 are rejected merely for the lack of clarity of their parent claims.

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*Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

(f) he did not himself invent the subject matter sought to be patented.

5. Claims 1, 3-6, and 8-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Goodman et al. (U.S. Patent 5,427,817, hereafter '817).

'817 teaches vapor depositing a columnar (i.e., needle-shaped) fluorescent layer composed of fluorescent material, on a substrate (col. 3, lines 41-64; Figs. 2-5, 8); and

controlling the vapor deposition to produce cracks (i.e., voids) in the fluorescent layer that render it less dense than if there were no cracks and to produce optical separation between the needles (Figs. 2-5, 8).

Claims 3 and 13-14: The vacuum evaporation technique heats the substrate to vaporization temperature of 550-750 °C and produces a jet of vaporized phosphor material that deposits on the substrate (col. 3, lines 50-54). The substrate is cooled to 100 °C during deposition (col. 5, lines 7-10). Because the vaporized gas flows from a hot zone (the evaporation boat) to a cold zone (the substrate), it must inherently cool to some degree as it travels.

Claims 4 and 10-12: Further, argon, an inert gas, is provided during the deposition process (col. 4, lines 41-54 and 61-67). There is no disclosure of means to heat or cool the argon gas, and therefore it must be provided at approximately room temperature. Thus, the cool argon gas in the chamber must inherently act to cool the evaporated phosphor gas to some degree as it travels to the substrate.

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Claims 5-6: The argon may be present at 10 mTorr (1.3 Pa) (col. 4, lines 41-45).

Claim 8: Gases, including argon, are removed through the action of a vacuum pump (col. 3, lines 6-12).

Claim 9: Argon is introduced through control valve (52) (col. 3, lines 6-12).

Claim 15: The deposition rate of CsI is 1-10 microns/minute (col. 3, lines 45-48). CsI has a density of  $4.51 \text{ g/cm}^3$  (from *Hawley's Condensed Chemical Dictionary*, 12<sup>th</sup> edn.). Thus, the deposition rate is about (1-10 microns/min.) ( $4.51 \text{ g/cm}^3$ ) ( $1 \text{ cm}/10^4 \text{ microns}$ ) ( $1000 \text{ mg/g}$ ) =  $0.451\text{-}4.51 \text{ mg/cm}^2 \text{ min}$ .

6. Claims 1-15 are rejected under 35 U.S.C. 102(e) and 35 U.S.C. 102(f) as being clearly anticipated by U.S. Patent Application Publication US2001/0007352 which has common inventors with the instant application. See Figs. 1 and 7 and paragraphs [0016]-[0018].

This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the copending application was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

This rejection may not be overcome by the filing of a terminal disclaimer. See *In re Bartfeld*, 925 F.2d 1450, 17 USPQ2d 1885 (Fed. Cir. 1991).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodman '817 in view of Tran et al. (U.S. Patent 5,368,882, hereafter '882).

'817 is discussed above. It does not explicitly state that the volume of the cracks is 5-50% of the phosphor film volume. Figs. 2 and 3 show small areas of crack volume while Figs. 4 and 5 show significant areas of void volume, but do not identify the amount. However, '882 demonstrates that it is possible to widen the cracks (i.e., increase the void volume by annealing). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have produced any desired crack volume, such as 5-50% with a reasonable expectation of success.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodman '817 in view of Noji et al. (U.S. Patent 4,528,210, hereafter '210).

'817 is discussed above. It discusses controlling the pressure of the argon (col. 4, line 41-col. 5, line 10), but does not explicitly teach that the pressure is controlled by passing the argon past a baffle, such as a partially closed valve. However, '210 teaches that the pressure of phosphor evaporation processes may be controlled by supplying argon through a partially closed valve (col. 5, line 42-col. 6, line 15). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the partially closed control valve of '210 as a means to provide the pressure control described by '817 with a reasonable expectation of success.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (703) 308-2331. The examiner can normally be reached on 9-5:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 306-3186 for regular communications and (703) 306-3186 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

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ABC

September 20, 2002



SHRIVE P. BECK  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700

EAST.  
Search  
ABP  
9/10/02

Number	Hits	Search Text	DB	Time stamp
-	110	(427/65).CCLS.	USPAT; US-PGPUB	2002/09/19 08:16
-	329	(427/69,70).CCLS.	USPAT; US-PGPUB	2002/09/19 08:16
-	17	((427/65).CCLS.) and ((427/69,70).CCLS.)	USPAT; US-PGPUB	2002/09/19 08:18
-	43	((427/65).CCLS.) or ((427/69,70).CCLS.) and (needle or pillar or crack)	USPAT; US-PGPUB	2002/09/19 08:19
-	18	((427/65).CCLS.) or ((427/69,70).CCLS.) and (needle or pillar)	USPAT; US-PGPUB	2002/09/19 08:22
-	38	((427/65).CCLS.) or ((427/69,70).CCLS.) and (column)	USPAT; US-PGPUB	2002/09/19 11:39
-	2	("4432011") or ("3821763").PN.	USPAT; US-PGPUB	2002/09/19 11:39
-	1327	(fluorescen\$2 or luminescen\$2) and ((cool\$3 or (reduc\$4 adj2 temperature)) with (inert or argon))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 11:51
-	93	(vapo\$1r adj deposit\$6) and ((fluorescen\$2 or luminescen\$2) and ((cool\$3 or (reduc\$4 adj2 temperature)) with (inert or argon)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 14:07
-	93	(vapo\$1r adj deposit\$6) and ((fluorescen\$2 or luminescen\$2) and ((cool\$3 or (reduc\$4 adj2 temperature)) with (inert or argon)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 14:14
-	47	substrate with cool\$3 with (inert or argon) with during!	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 14:24
-	2709	(inert or argon or gas) with (introduc\$7 or enter\$5 or inject\$6) with baffle	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 14:26
-	961	(inert or argon or gas) with (introduc\$7 or enter\$5 or inject\$6) with baffle with (chamber or reactor)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 14:55
-	84	((inert or argon or gas) with (introduc\$7 or enter\$5 or inject\$6) with baffle with (chamber or reactor)) and (vapo\$1r adj deposit\$3)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 14:58